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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/680,156	10/05/2000	Stephen D. MacArthur	07072-115001	9150
45456	7590	06/17/2005	EXAMINER	
RICHARD M. SHARKANSKY PO BOX 557 MASHPEE, MA 02649			CHANKONG, DOHM	
			ART UNIT	PAPER NUMBER
			2152	
DATE MAILED: 06/17/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/680,156

Applicant(s)

MACARTHUR ET AL.

Examiner

Dohm Chankong

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5/31/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1> This action is in response to Applicant's request for continued examination. Claims 6 and 7 have been added. Claims 1-7 are now presented for further examination.

2> This action is a non-final rejection.

#### *Response to Arguments*

3> Applicant's arguments with respect to claims 1-5 have been carefully considered but are moot in view of the new ground(s) of rejection.

#### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4> Claims 1-7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakayama et al, U.S Patent No. 5,920,893 ["Nakayama"], in view of Thor, U.S Patent No. 5,448,564, in further view of Mehta et al, U.S Patent No. 6,570,887 ["Mehta"].

5> As to claim 1, Nakayama teaches a method for transferring data between a host computer/server and a bank of disk drives through a system interface, such system interface

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comprising: a plurality of first directors coupled to the host computer/server; a plurality of second directors coupled to the bank of disk drives; a data transfer section couple to the plurality of first directors and second directors and a messaging network coupled to the plurality of first directors and the plurality of second directors, such first and second directors controlling data transfer between the host computer and the bank of disk drives in response to messages passing between the directors through the messaging network as such data passes through the data transfer section, such method comprising:

preparing in a transmitting one of the directors, one of the messages to be sent to a receiving one, or ones of the directors;

receiving in one of the receiving one or ones of the directors the transmitted one of the messages (Figure 3, column 2, lines 27-35, column 4, line 42 to column 5, line 13 and column 6, lines 45-50).

Nakayama does teach transmitting such one of the messages to said receiving one, or ones, of the directors through the messaging network [column 3 «lines 60-62»] but not that such messages by-pass the data transfer section. He also does not teach:

determining in such receiving one, or ones, the receiving directors whether the received one of the messages from a proper, or an improper transmitting one of the directors;

rejecting the one of the messages if it is from an improper transmitting one of the directors and further processing such one of the messages if it is from a proper one of the transmitting directors.

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6> Thor teaches a transmitting one of the messages through a messaging network with such messages by-passing a data transfer section [Figure 2 «items 46, 60» | column 9 «lines 9-26» | column 13 «lines 23-33» where : Thor discloses a separate “control and maintenance processor” where control messages are sent. As can be seen from the figure, the processor and its transfer paths are separated from Thor’s data transfer section. These control messages help control the data that pass through the frame buffer memory]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include Thor’s separated control message processor into Nakayama’s data transfer system to enable real-time control to update data and respond to errors regarding the transfer of the data through the buffer.

7> In a related field of invention, Mehta is directed towards a message passing system. Mehta teaches a method for determining whether the received one of the messages from a proper, or an improper transmitting one of the directors [column 5 «lines 14-17 and 21-23» | column 9 «lines 4-6» where : Mehta discloses verifying the source of the message by comparing the “valid source bit” within the mask]; and

rejecting the one of the messages if it is from an improper transmitting one of the directors and further processing such one of the messages if it is from a proper one of the transmitting directors [Figure 6 «item 620, 640» | column 9 «lines 14-17» where : Mehta discloses in Figure 6 that when there is not a match (the source is invalid), then the data message is not written (rejected)].

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It would have been obvious to one of ordinary skill in the art to incorporate Mehta's source verification methods into Nakayama's directors and data transfer system. One would have been motivated to implement Mehta's source validation and message verification methods into Nakayama to prevent director's from receiving data from improper sources.

8> As to claim 2, Nakayama does not explicitly teach a method including having the receiving, one or ones, of the directors send an acknowledge receipt of the one of the messages to said transmitting one of the transmitting such one of the messages.

9> As to claim 3, Nakayama discloses a method for transferring data between a host computer/server and a bank of disk drives through a system interface, such system interface comprising: a plurality of first directors coupled to the host computer/server; a plurality of second directors coupled to the bank of disk drives [abstract | Figure 1], such method comprising:

passing data between the plurality of first directors and second directors through a cache memory coupled to the plurality of first directors and second directors [Figure 3 <items 305, 306, 309, 310, 311> | column 4 <lines 61-63>];

passing messages through a messaging network coupled to the plurality of first directors and the plurality of second directors, such first and second directors controlling data transfer between the host computer and the bank of disk drives in response to the messages passing between the directors through the messaging network as such data passes through the

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cache memory [column 3 <lines 48-62> | column 4 <lines 2-25 and lines 52-65>], such memory passing comprising:

preparing in a transmitting one of the directors, one of the messages to be sent to a receiving one, or ones, of the directors [column 4 <lines 2-7>];

receiving in one of the receiving one or ones of the directors the transmitted one of the messages [column 6 <lines 7-11>];

Nakayama does not disclose that the message network and data transfer section are separate and consequently does not disclose transmitting such one of the messages to receiving one, or ones, of the directors through the messaging network with such one of the messages by-passing the cache memory. He also does not disclose:

determining in receiving one, or ones, the receiving directors whether the received one of the messages is from a proper, or an improper transmitting one of the directors;

rejecting such one of the transmitted messages if it is from an improper transmitting one of the directors and further processing such message if it is from a proper one of the transmitting directors.

10> Thor teaches a transmitting one of the messages through a messaging network with such messages by-passing cache memory [Figure 2 «items 46, 60» | column 9 «lines 9-26» | column 13 «lines 23-33» where : Thor discloses a separate “control and maintenance processor” where control messages are sent. These control messages help control the data that pass through the frame buffer memory]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include Thor's separated control message

section into Nakayama's data transfer system to enable real-time control to update data and respond to errors regarding the transfer of the data through the buffer. One would have motivated to apply this implementation in Nakayama as he suggests computers attached to different buses for the transmission of different types of data [column 8 «lines 35-54»].

11> In a related field of invention, Mehta is directed towards a message passing system. Mehta teaches a method for determining whether the received one of the messages from a proper, or an improper transmitting one of the directors [column 5 «lines 14-17 and 21-23» | column 9 «lines 4-6» where : Mehta discloses verifying the source of the message by comparing the "valid source bit" within the mask]; and

rejecting the one of the messages if it is from an improper transmitting one of the directors and further processing such one of the messages if it is from a proper one of the transmitting directors [Figure 6 «item 620, 640» | column 9 «lines 14-17» where : Mehta discloses in Figure 6 that when there is not a match (the source is invalid), then the data message is not written (rejected)].

It would have been obvious to one of ordinary skill in the art to incorporate Mehta's source verification methods into Nakayama's directors and data transfer system. One would have been motivated to implement Mehta's source validation and message verification methods into Nakayama to prevent director's from receiving data from improper sources.

12> As to claims 4 and 5, Nakayama does not specifically disclose a method wherein the messages are transmitted and received as packets.



13> Thor discloses a method wherein the messages are transmitted and received as packets [column 9 «lines 9-14» where : Thor's frames are analogous to packets]. It is well known in the art that messages are transmitted and received over networks as packets and therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement Nakayama's data as packets per Thor's teachings.

14> As to claim 6, Nakayama does not explicitly disclose a messaging network that is a packet switching network having a plurality of ports.

15> Thor discloses the messaging network that is a packet switching network having a plurality of ports, each one of the ports being connected to a corresponding one of the plurality of first and second directors and wherein the messages pass to and from the ports [Figure 2 «items 42, 58, 60» | column 1 «lines 6-8» | column 2 «lines 24-26» | column 7 «lines 37-47» where : Thor's interface devices are analogous to directors. Thor's figure 2 clearly shows the devices connected to the ports of the control message processor]. It would have been obvious to one of ordinary skill in the art to incorporate Thor's messaging network into Nakayama's storage access system to separate control messages from data messages to allow for real-time control of the data [see Thor, column 13 «lines 30-33»].

16> As to claim 7, Nakayama does not disclose validating a proper director by checking for a mask.

17> Mehta discloses that an improper source is indicated as being faulty by a mask [Figure 5 | column 5 «lines 10-24» : checks the VS bit as an indication of whether or not the source is valid]. It would have been obvious to one of ordinary skill in the art to incorporate Mehta's source matching method into Nakayama to prevent director's from receiving data and control messages from improper sources.

18> Claims 1, 2, 7 are rejected under 35 U.S.C § 103(a) as being unpatentable over Nakayama, in view of Gudaitis et al, U.S Patent No. 4,688,168, in further view of Mehta.

19> As to claim 1, Nakayama teaches a method for transferring data between a host computer/server and a bank of disk drives through a system interface, such system interface comprising: a plurality of first directors coupled to the host computer/server; a plurality of second directors coupled to the bank of disk drives; a data transfer section couple to the plurality of first directors and second directors and a messaging network coupled to the plurality of first directors and the plurality of second directors, such first and second directors controlling data transfer between the host computer and the bank of disk drives in response to messages passing between the directors through the messaging network as such data passes through the data transfer section, such method comprising:

preparing in a transmitting one of the directors, one of the messages to be sent to a receiving one, or ones of the directors;

receiving in one of the receiving one or ones of the directors the transmitted one of

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the messages (Figure 3, column 2, lines 27-35, column 4, line 42 to column 5, line 13 and column 6, lines 45-50).

Nakayama does teach transmitting such one of the messages to said receiving one, or ones, of the directors through the messaging network [column 3 «lines 60-62»] but not that such messages by-pass the data transfer section. He also does not teach:

determining in such receiving one, or ones, the receiving directors whether the received one of the messages from a proper, or an improper transmitting one of the directors;

rejecting the one of the messages if it is from an improper transmitting one of the directors and further processing such one of the messages if it is from a proper one of the transmitting directors.

20> Gudaitis teaches a transmitting one of the messages through a messaging network with such messages by-passing a data transfer section [Figure 3 | column 2 «lines 28-32» | column 4 «line 56-19»]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include Gudaitis' two independent bus design, one for the transfer of data the other for the transfer of control messages, into Nakayama's to enable faster transmission of data through the transfer path.

21> In a related field of invention, Mehta is directed towards a message passing system. Mehta teaches a method for determining whether the received one of the messages from a proper, or an improper transmitting one of the directors [column 5 «lines 14-17 and 21-23» |

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column 9 «lines 4-6» where : Mehta discloses verifying the source of the message by comparing the “valid source bit” within the mask]; and

rejecting the one of the messages if it is from an improper transmitting one of the directors and further processing such one of the messages if it is from a proper one of the transmitting directors [Figure 6 «item 620, 640» | column 9 «lines 14-17» where : Mehta discloses in Figure 6 that when there is not a match (the source is invalid), then the data message is not written (rejected)].

It would have been obvious to one of ordinary skill in the art to incorporate Mehta's source verification methods into Nakayama's directors and data transfer system. One would have been motivated to implement Mehta's source validation and message verification methods into Nakayama to prevent director's from receiving data from improper sources.

22> As to claims 2 and 7, see the previous rejections for claims 2 and 7, supra.

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Calle et al, U.S Patent No. 4,075,686;

Christian et al, U.S Patent No. 4,430,701;

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dohm Chankong whose telephone number is (571)272-3942. The examiner can normally be reached on 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess can be reached on (571)272-3949. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DC



Dung C. Dinh  
Primary Examiner